<u>**Assignment No.2**</u>

<u>**Write a character device driver which works as given below.**</u>

- The driver should be inserted using insmod only if your username and kernel versions are correct.

  Example: - If the driver name = mymodule.ko

                               username from pc = "xxx"

                               kernel version (3.5) given in array form = 3,5

  Then insertion of the driver should be successful only when called as

  insmod mymodule.ko username="xxx" kernel=3,5

  If insertion successful, the major number, minor number and username should be printed when checked in kernel messages(dmesg).

- The driver can only be removed using rmmod with a timer value is given in seconds and performing 2 actions before the timer expires. Example: - If the timer is for 180s then rmmod is called as

  rmmod mymodule.ko timer=180

 Two actions to be performed before the timer expires: -

1. Read (using "cat" command in user space) the status of the driver which gives the kernel message *"mymodule alive"*
2. With a user space program open a file in the desktop which has your pc username(eg:xxx) written in it, change the letter case of the username("XXX") and send it to the driver

   If the above two actions are not performed within the timer expiration period, then the module removal has to be unsuccessful and needs to print *"driver removal unsuccessful try again"* in dmesg.

If the removal is successful print *"driver successfully removed from the user with case changed username XXX"*.

Expected concepts to be explored: - ioctl, read/write, kernel wait queue, kernel timer.

Instructions:

The report(pdf) should contain the following:

- Problem Statement

- Methodology
- Explanation
- Screenshots

Submit a report (as pdf) detailing out the execution procedure in achieving the goals

- The report should be submitted individually
- Source code and Readme file should also be submitted

Compress all the files into a folder with filename FirstName_RollNo.rar

Deadline for submission: 06/11/2023: 11.59PM